

STAR PARTS

QUADDER
MAINTENANCE
MANUAL



STAR PARTS, INC.
SOUTH HACKENSACK, N. J.

Inch.
D-243

MANUAL

**"STAR" AUTOMATIC
QUADDING ATTACHMENT
MODELS C-D-E**

JUNE 1953

COMMUNICATIONS

When writing to the factory regarding your STAR QUADDER, please state the serial number. It will speed a reply also if, in referring to parts, catalog numbers are used for identification wherever possible.



STAR PARTS, Inc.

SOUTH HACKENSACK, NEW JERSEY

D-243
Book

MANUAL
STAR AUTOMATIC
GUARDING ATTACHMENT
MODEL C-02

JUNE 1953

COMMUNICATIONS

When using the Star Guarding Attachment, the user should be aware of the following instructions:

1. The Star Guarding Attachment is designed to be used in conjunction with the Star Guarding System.
2. The Star Guarding Attachment is not to be used in conjunction with any other system.
3. The Star Guarding Attachment is not to be used in conjunction with any other system.

STAR PARTS, Inc.

1000 HAZEN RD. NEW YORK, N.Y.

FOREWORD

This manual represents the experience of about three years of field service on the STAR Automatic Quadding Attachment. Because it is a relatively new piece of equipment, we realize that our field experience is incomplete. We have therefore adopted the loose-leaf method of putting this manual together. It will never become obsolete; when and if further experience dictates, additional instructions will be sent out to each registered holder of this booklet.

Should any problem arise not answered in this manual, please write us stating the serial number of the STAR Quadder about which you are writing. Wherever possible, use the catalog part number in identifying any parts to which you may be referring; or, if you wish, refer to the drawings in the manual for identification purposes.

GUARANTEE

The STAR Automatic Quadding Attachment is guaranteed for ONE YEAR with respect to defects in parts and workmanship. Parts sent transportation prepaid will be inspected at the factory, and, if in our judgment are defective, will be replaced gratis.

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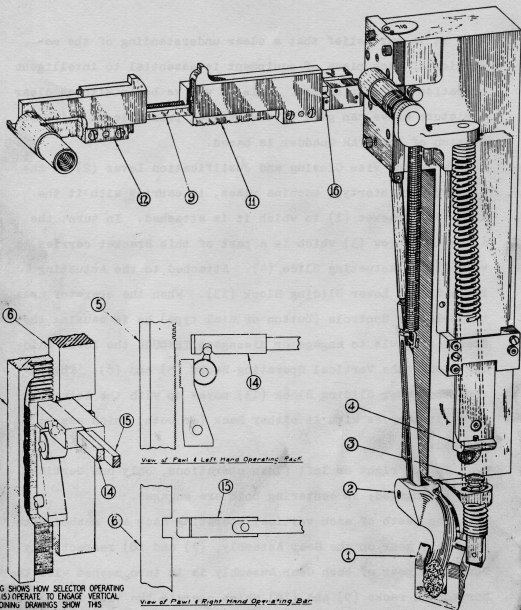
THE PRINCIPLE OF ACTUATION

It is our belief that a clear understanding of the mechanics of each piece of equipment is essential to intelligent operation and maintenance. This is why we begin with as clear a picture as we can give of the general principle on which actuation of the STAR Quadder is based.

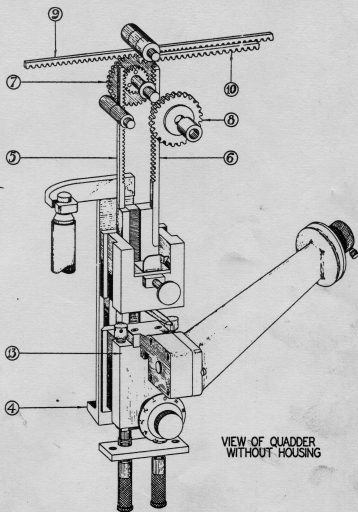
When the Vise Closing and Justification Lever (2) of the Linotype or Intertype machine rises, it carries with it the Actuating Bracket (1) to which it is attached. In turn, the Actuating Screw (3) which is a part of this Bracket carries with it the Actuating Slide (4). Attached to the Actuating Slide is the Lower Sliding Block (13). When the operator uses the Selector Controls (button or dial type) he is causing the Operating Pawls to engage or disengage THROUGH the Lower Sliding Block, the Vertical Operating Racks (5) and (6). Thus, when the Lower Sliding Block (13) moves up with the Actuating Slide it carries with it either Rack (or both) which may be engaged.

In the right or left flush operations, only one vertical Rack is engaged; in centering both are engaged.

The teeth of each vertical Operating Rack are meshed with the small gear on the Gear Assembly, (7) and (8) respectively. The large gear of each Gear Assembly is in turn meshed with the horizontal racks (9) and (10) which operate the Vise Jaw Blocks (11) and (12), on which are mounted the Vise Jaws.



REAR VIEW OF MODEL-E QUADDER



THE PRINCIPLE OF ACTUATION-Continued

The Rack (9) is attached to the Right Hand Vise Jaw Block; the Rack (10) has attached to the end of it a Pusher Block or Guide (16) which pushes the Left Hand Vise Jaw Block (11). The Left Hand Vise Jaw Block therefore is referred to as "floating" in the Vise Cap. It is pushed back to another position by the Delivery Slide Long Finger only when there is a change to a longer measure in centering operations.

ROUTINE CARE and SPARE PARTS

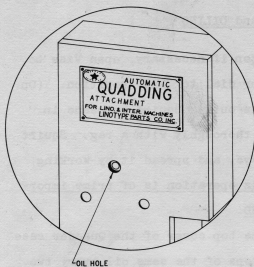
Like any other piece of moving machinery, your Quadder will work at its peak efficiency ONLY WITH REGULAR CARE. In the case of the STAR Quadder, this routine is so light, and requires so little time, there is no reason for neglecting it.

Routine maintenance and a small stock of parts will pay great dividends in time saved. Since this is a relatively simple and rugged mechanism, a very few parts need to be carried in stock. These are the ones recommended as a minimum. They represent a very nominal investment in dollars and cents.

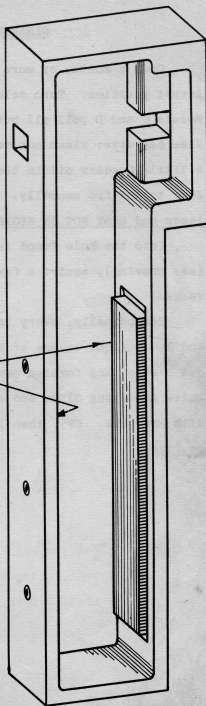
- 6 Brake Rollers
- 1 Left Hand Vise Jaw Safety Switch
- 1 Vise Locking Stud, Left Hand
- 1 Vise Closing and Justification Spring
- 1 Pt. or Qt.-Quadder Lubricating Oil
(used also for Keyboard Cams and Distributor)

For those who want more complete protection, these parts may be added:

- 1 Pot-Pump Solenoid
- 1 Brake Solenoid
- 1 Light Switch



Sliding Unit
Guide Rails



CLEANING and OILING

Once a month, or more often if necessary, open Vise to lowest position. Turn selector dial to "REG" position. (On Models C and D pull all buttons out.) Squirt kerosene in Vise Cap ways; clean out ways thoroughly with a rag. Squirt a little Quadder oil in the ways, and spread it by working Jaws to and fro manually. This operation is of prime importance and MUST NOT BE NEGLECTED.

Into the hole found in the top cover of the Quadder case (see drawing), squirt a few drops of the same oil every two weeks.

Periodically, every two months or so, remove both upper and lower front covers of the Quadder housing. Blow or brush out dust or any foreign particles which might be found inside. Raise Actuating Slide and clean the Sliding Unit Guide Rails with kerosene. Dry, then lubricate with Quadder oil applied by finger.

BRAKE MECHANISM and ACTUATING SLIDE

MAINTENANCE The brake mechanism should be cleaned and checked for wear every two or three months, or more often if local conditions require it.

Double action of the Vise Jaws is caused by failure of the Brake. Preventive maintenance will keep the Brake holding.

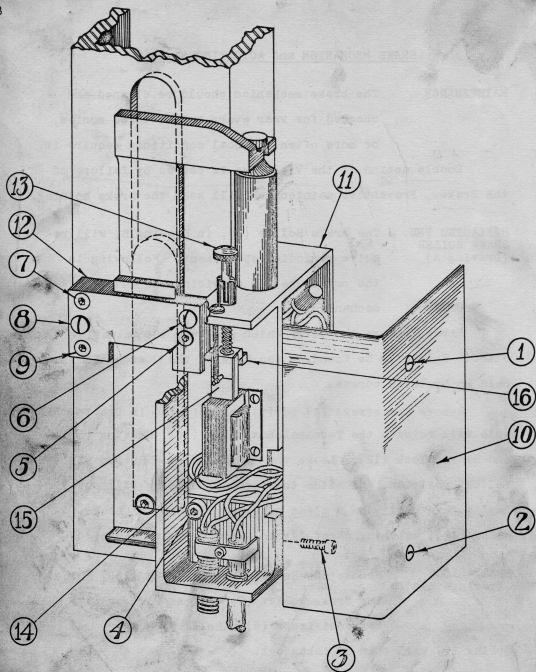
REPLACING THE BRAKE ROLLER (Drawing A) The Brake Roller (2), in Drawing B, will require periodic replacement. Following is the procedure for servicing the Brake mechanism:

First, remove the cover which protects the Actuating Slide. This will be found on the back of the Quadder Housing, held on by three screws.

Remove the screws (1) to (9) as indicated in Drawing "A". This will release the Terminal Box Cover (10), Housing (11), and Brake Block (12). Leave the Manual Release Button (13) in "UP" position, and slide the Terminal Housing (11) out. Lay it down gently on a clean surface. Remove the Brake Block (12), watching carefully to avoid dropping parts.

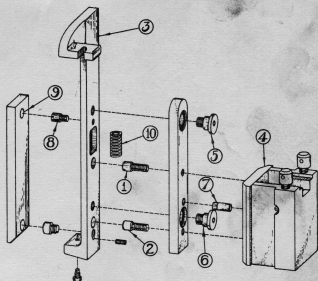
BRAKE BLOCK (Drawings B-C) Remove the Release Lever Spring (1). Holding Brake Roller (2) against Plunger (3), take out Lever (4). Roller, Plunger, and Spring (5) will then be taken out.

The Brake Body (6) and Brake Shoe (7) should then be washed in some spirits and dried completely clean.



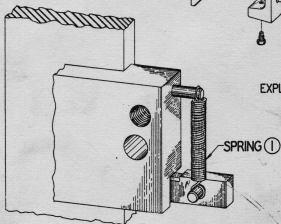
Drawing - "A"

LOWER REAR VIEW OF QUADDER



Drawing - D -

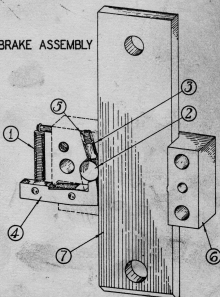
EXPLODED VIEW OF ACTUATING SLIDE AND
LOWER SLIDING UNIT BODY



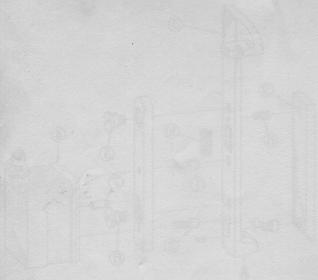
Drawing - C -

REAR VIEW OF BRAKE BLOCK SHOWING
HOW BRAKE RELEASE LEVER SPRING IS
ATTACHED

BRAKE ASSEMBLY

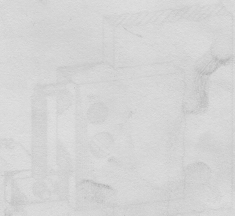


Drawing - B -



EXPLODED VIEW OF ACTIVATING LEE UNIT
OVER STAIN UNIT BODY

STAIN UNIT



BOAT ASSEMBLY

EXPLODED VIEW OF BOAT ASSEMBLY
OVER STAIN UNIT BODY



BOAT ASSEMBLY

In reassembling the Brake Block, later, be sure that the Spring (1), is replaced as shown in Drawing "C", with particular attention to the bottom loop. Binding of the Release Lever action may result if Spring is not replaced properly.

ACTUATING SLIDE and LOWER SLIDE BLOCK (Drawing D) Remove the two screws designated (1) and (2) in Drawing "D". DO NOT TOUCH ANY OTHER SCREWS, EXCEPT TO MAKE SURE THAT THEY ARE TIGHT. Remove the Actuating Slide (3) by pulling top and bottom simultaneously. The Lower Slide Block (4) will then drop. Check screws (5) and (6) to see that they are tight.

REINSTALLING ACTUATING SLIDE Remove the Lower Front Cover which is held in place by three screws, from the Quadder Housing. Raise the Lower Slide Block (4) to line up Dowel (7) with center hole on the Block. Replace the screws (1) and (2), drawing them tight alternately and gradually.

Raise and lower the Actuating Slide several times to test for free movement.

REINSTALLING BRAKE (Drawings A-B) Reassemble Brake Block and Shoe, using a new Brake Roller, if necessary, (Drawing B). Install it on the Quadder housing (Drawing A) replacing screws (8), (7), and (9), in that

order. The latter two screws (7) and (9) should be brought up thumb tight only.

Replace terminal housing, sliding it back into place. Replace the dowel screw (6), followed by screws (4) and (5).

Now bring all screws gradually to tight, even bearing. Let Manual Release Button down and raise the Actuating Slide up and down to test for freedom of movement.

If the slide binds, loosen screws in Brake Block again, and tighten again to insure even bearing.

Return Manual Release Button up to normal position.

REPLACING BRAKE
ON EARLIER SERIAL
QUADDERS
(Drawing A-D)

On earlier serial Quadders, there are no locating dowels (5) and (6). On these, first raise Manual Release Button to upper position. Raise the Actuating Slide until the Stud (8) appears in upper hole (9) of the Brake Shoe (Drawing "D"). Then tighten Brake Block screws (7), (9), and (5). (Drawing "A").

If Stud (8) is not centered on the hole, it will be necessary to shift Brake Block to one side or the other to obtain this relationship before tightening screws.

Let the Manual Release Button down, and check Actuating Slide for freedom of movement.

THE ELECTRO PUMP STOP

ADJUSTMENT

The Pot Pump Stop Solenoid Bracket should be mounted on the machine column at location shown in adjacent photograph.

Loosen the Adjusting Nut on the bracket over the bronze Pot Pump Stop Operating Lever. Push the Solenoid Arm in to the full depth of the Solenoid, and placing the bronze Operating Lever against the Pot Pump Stop Lever, lock the Nut.

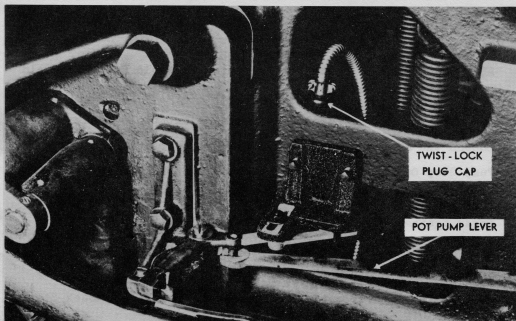
Be sure the Pump Stop Lever clears the Stop Lever, and does not bank against the Stop Lever Spring (BB214). In the case of the Intertype, it must not bank against the Back Stop Pin.

It is important that this spring be properly adjusted to exert enough pressure on the stop lever to return it to closed position after the cast, but not too strong to overcome the action of the Solenoid.

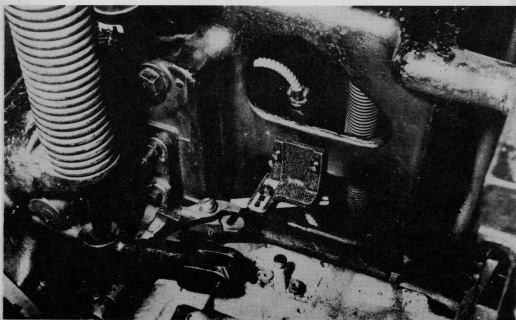
ADJUSTMENT OF INTERTYPE POT PUMP LEVER STOP LEVER SPRING

If more tension is required on the Intertype Pot Pump Stop Lever (3), proceed as follows: Loosen the Lock Nut under the Pot Pump Lever Bracket (1), which locks the Adjusting Screw (2). Turn the Screw (2) counter-clockwise slightly. If more tension is required, shift the spring end to the next hole. Be sure the spring lies flat against the Pump Stop Lever (3).

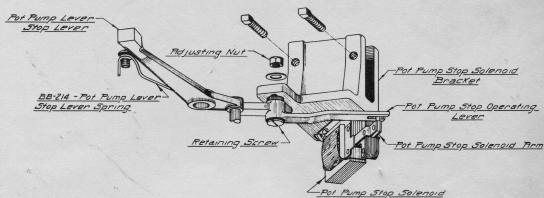
If the Solenoid Arm movement is sluggish, take the Solenoid apart and clean it. Apply a little DRY graphite for Lubrication.



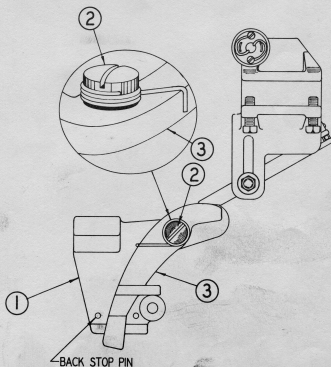
ELECTRO PUMP STOP BRACKET
(LINOTYPE)



ELECTRO PUMP STOP BRACKET
(INTERTYPE)

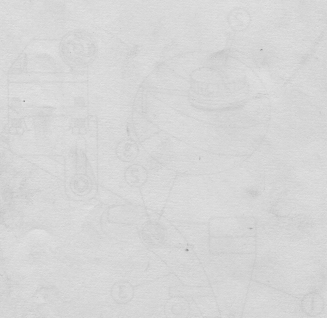


TOP VIEW OF INTERTYPE PUMP STOP



INTERTYPE PUMP STOP

TOP VIEW OF INTERTYPE PUMP STOP



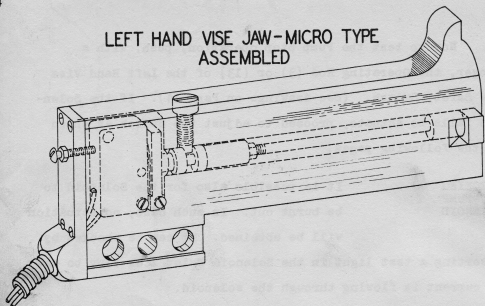
Now to test the Pump Stop operation, push, with a finger, the Operating Rod (3) or (13) of the Left Hand Vise Jaw Safety Switch. (See drawings on Page 14). If the Solenoid fails to actuate, proceed to adjust the Switch as shown in the following pages.

CHECKING
POT-PUMP
SOLENOID

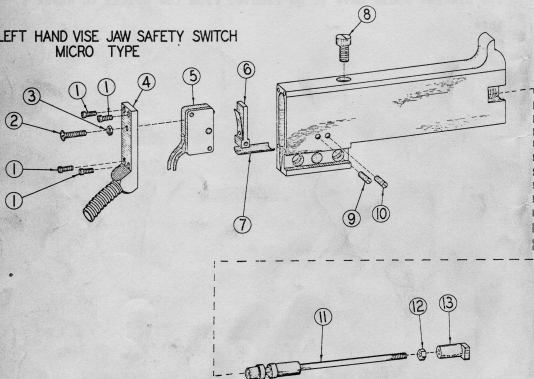
It is possible also for the Solenoid to be burnt out. In such case, no actuation will be obtained. It can be checked by inserting a test light in the Solenoid Twist Lock Plug to see if current is flowing through the solenoid.

Another possibility is broken lead wires on the Solenoid. The bracket would have to be removed from the column to check this.

LEFT HAND VISE JAW-MICRO TYPE
ASSEMBLED



LEFT HAND VISE JAW SAFETY SWITCH
MICRO TYPE



ADJUSTMENT OF VISE JAW SAFETY SWITCH

CARTRIDGE TYPE

(Page 16A)

Loosen the Lock Screw (1), at the top of Left Hand Vise Jaw. Hold a matrix against the end of the Right Hand Vise Jaw. Bring the Left Hand Vise Jaw in to contact the matrix. Turn the Switch Adjusting Screw (2) in until the Pump Stop clicks. Then tighten the Lock Screw (1).

Be sure not to turn Adjusting Screw too far forward, otherwise Pump Stop may be left open continuously.

MICRO TYPE

(Opposite)

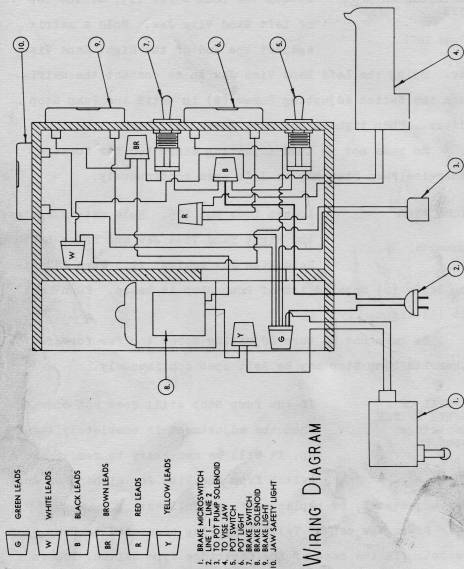
Loosen Lock Nut (3). Hold matrix against the Right Hand Vise Jaw and bring Left Hand Vise Jaw against it. Turn Adjusting Screw (2) until click of Pump Stop is heard. Turn Lock Nut (3) tight.

Be sure not to turn Adjusting Screw too far forward, otherwise Pump Stop may be left open continuously.

REMOVAL OF SAFETY SWITCH (Cartridge Type)

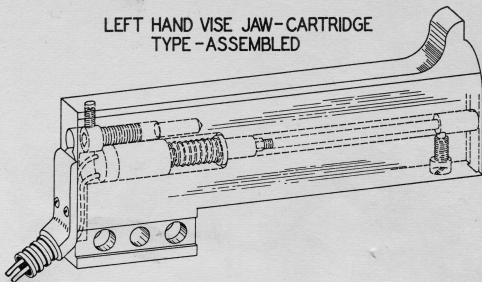
If the Pump Stop still does not operate when the adjustment is completely taken up, it will be necessary to remove the switch from the Vise Jaw either for further adjustment, or replacement, as follows:

Disengage cap of Twist Lock Plug connected to Pump Stop Bracket. In the case of the Cartridge Type Switch, loosen the Lock Screw (1) at top of Vise Jaw. Remove the two Screws (15) holding the Cable Fitting (14) to the end of the Vise

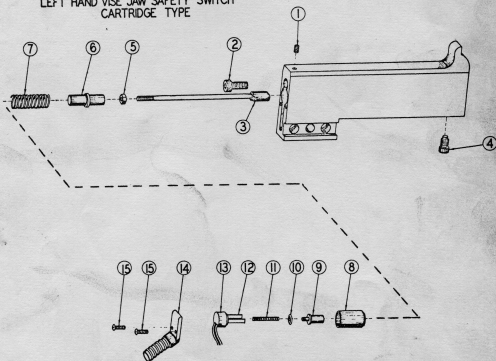


WIRING DIAGRAM

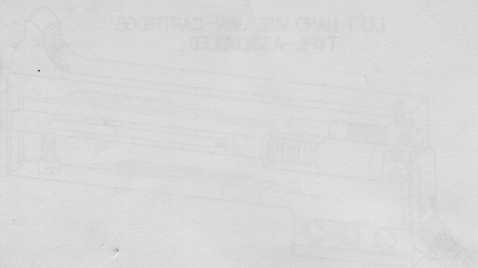
LEFT HAND VISE JAW-CARTRIDGE TYPE - ASSEMBLED



LEFT HAND VISE JAW SAFETY SWITCH CARTRIDGE TYPE



LEFT HAND VISE JAW - CARTRIDGE
TYPE - ASSEMBLED



LEFT HAND VISE JAW - CARTRIDGE
TYPE - ASSEMBLED



Jaw, as well as the Adjusting Screw (2). Switch can then be withdrawn from the Vise Jaw. Carefully twist off the Cap (13) of the Switch, watching for the little Spring (11). Examine the two Leaf Contacts (12) and the Center Contact (10) for wear. If excessive, replace the Switch with a new one. (See instructions in the second paragraph following).

If little or no wear is visible, press the Leaves closer together, to insure that Center Contact is touching both Leaves simultaneously; then reassemble the Switch. Connect Plug, and press the Fibre Button to see if contact is made. If the Pump Stop is thus actuated, the Switch can be tried in the Jaw. Before reinstalling it, however, check to see that the insulation on the end of the switch has not been broken away. Exposed wires will cause a short circuit.

REPLACEMENT OF SAFETY SWITCH (Cartridge Type)	If no contact can be obtained, it will be necessary to replace the Switch with a new one. This is the suggested procedure:
---	--

First, remove the ends of the Switch Wires (Red and White) from terminals (see Wiring Diagram). Tie a long string, longer than the Wires, to the two Wires mentioned. Withdraw Switch and Wires from the cable so that the string replaces the Wires in the Conduit. When installing the new Switch, tie the end of the string to the Wires and pull the Wires back through the Conduit by the lower end of the string.

REMOVAL AND
REPLACEMENT
OF MICRO-
TYPE SWITCH

In the case of the Micro-Type Safety Switch it will be necessary to remove Screw (9) before withdrawing the Switch.

Follow the balance of procedure outlined in previous paragraph, with respect to replacement of Switch.

SIGNAL LIGHTS

SAFETY
SWITCH
LIGHT

The Safety Switch Light goes on and off with the action of the Vise Jaw Switch.

If there is a failure of the Switch in "ON" position, light will remain on. If failure is in "OFF" position, light will remain off.

If light operates normally on and off, and the pump stop fails to open, it will then be a sign that the pump solenoid, or the wires terminating adjacent to it, should be checked.

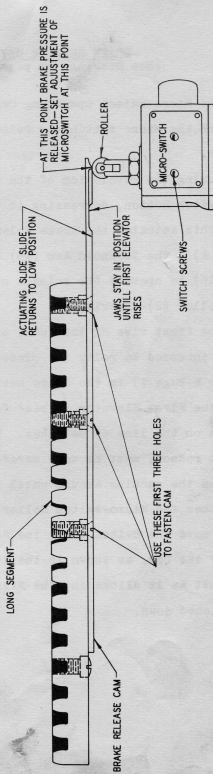
BRAKE AND
POT LIGHTS

The failure of either Light to go on - or stay on - indicates one of two things:

1. The Light has burned out.
2. The Switch has failed.

These parts are easily checked with a test light and should be replaced if necessary.

How Brake Is Released



BRAKE RELEASE MECHANISM
(See Drawings on pages 7 and 19)

The Micro-switch Operating Cam is designed, in conjunction with the Micro-switch, to release the Vise Jaws after the cast.

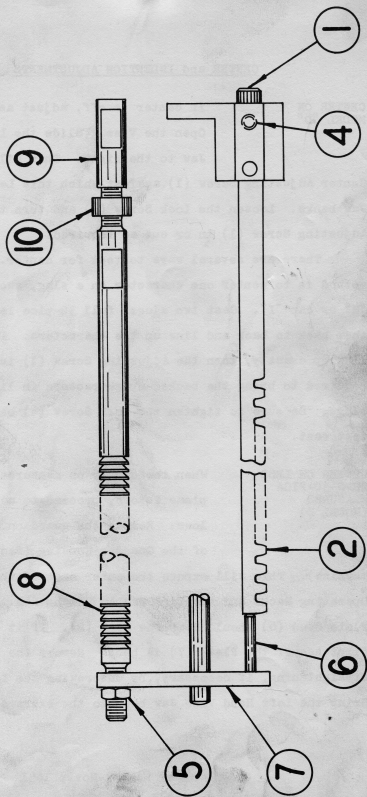
During the revolution of the machine it contacts the Micro-switch Button, depressing it to close an electrical circuit. This actuates the Brake Solenoid (Part (14) on Page 7-Drawing A). The Solenoid Arm (15) causes the Brake Release Lever (16) to operate for release of the pressure against the Brake Roller (2)-(Drawing B).

The first rise of this cam, as pointed out in the drawing, is intended to relax the pressure of the Spring (10) (Drawing B-Page 7) in the brake mechanism just enough to permit the First Elevator to rise from the Vise Jaws without pressure on the line of matrices. The following adjustment, for that reason, must be very carefully made:

Run the machine around until the Micro-switch Operating Cam reaches the Micro-switch Roller. Loosen Micro-switch Screws, move the Switch until the Roller meets the first high point of the Cam, as shown in the drawing.

Just as it clicks on, the Micro-switch Screws should be tightened down.

VICE JAW ADJUSTING ROD AND PUSHER BLOCK MODEL - D



CENTER and INDENTION ADJUSTMENTS**CENTER ON
MODEL "D"**

If center is off, adjust as follows:

Open the Vise. Slide the Left Hand Vise Jaw to the right. This will expose the Center Adjusting Screw (1) against which this Left Hand Vise Jaw banks. Loosen the Lock Screw (4) and turn the Center Adjusting Screw (1) in or out as required.

There are several ways to test for center. A good method is to center one character on a slug, such as the cap "H" or cap "I". Cast two slugs, full 30-pica length. Put them back to back and line up the characters. If they do not line up exactly, turn the Adjusting Screw (1) in or out as required to bring the backed-up characters in line on the two slugs. Be sure to tighten the Lock Screw (4) before each test cast.

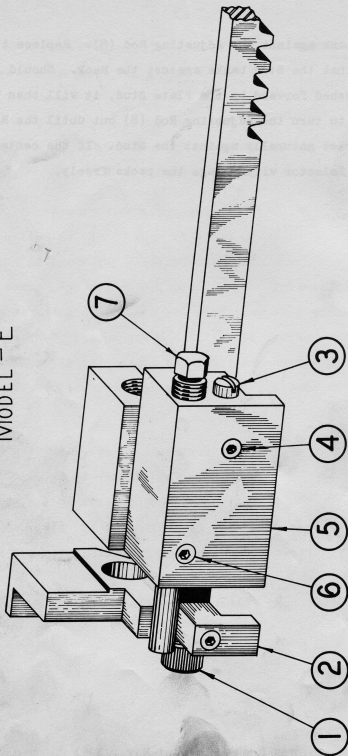
**CENTER ON LESS
THAN 30-PICA
MEASURES
(MODEL D)**

When the center on measures less than 30 picas is off, proceed to adjust as follows: Remove the guard on the left side of the Quadder Housing (facing the

machine). This will expose the outer ends of the Vise Jaw Operating Racks and the Vise Jaw Adjusting Rod. The Pusher Plate Stud (6) should meet the Rack (2). If it does not, first see if the Plate (7) is bent. Remove the Plate for straightening, if necessary, by unscrewing the Lock Nut (5). Bring the Left Hand Vise Jaw back to the extreme left at 30

picas to bank against the Adjusting Rod (8). Replace the Plate so that the Stud banks against the Rack. Should the Rack be pushed forward by the Plate Stud, it will then be necessary to turn the Adjusting Rod (8) out until the Rack comes to rest naturally against the Stud. If the center is right the Selector will engage the racks freely.

PUSHER BLOCK AND LEFT HAND VISE JAW POSITIONING NUT MODEL - E



MODEL "E" CENTER
ADJUSTMENT

The banking of the Left Hand Vise Jaw is, like the Model "D", against the Center Adjusting Screw (1) on the end of the Pusher Block (2). Adjustment is obtained in the same way as described at the beginning of the previous page, so far as the 30-pica measure center is concerned.

MODEL "E" CENTER
LESS THAN 30 PICAS

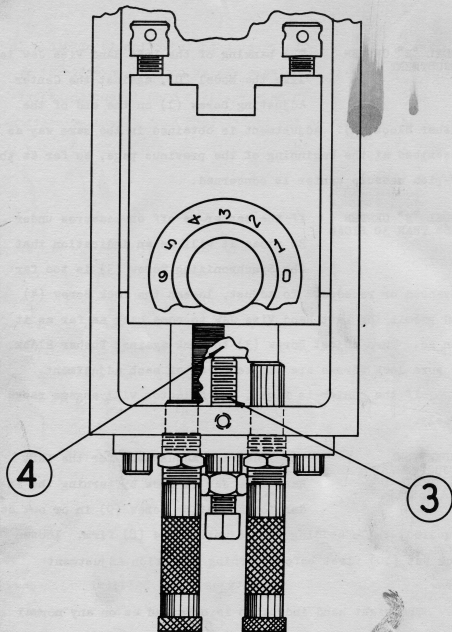
If the center is off on measures under 30 picas it will be an indication that the Synchronizing Screw (3) is too far advanced or receded. To adjust, loosen the Lock Screw (4) and permit the Left Hand Vise Jaw to come back as far as it can go. Then adjust Screw (3) to bank against Pusher Block. Be sure lock screws are tightened after each adjustment.

If the center is right, the Selector will engage racks freely.

INDENTION
ADJUSTMENTS
ON MODEL "D"
(Dr.-p.21)

The indention adjustment for the Left Hand Vise Jaw is made by turning the Indention Adjusting Screw (9) in or out as required, while holding the Adjusting Rod (8) firm. Loosen Lock Nut (10) first before turning Indention Adjustment Screw.

The right hand indention is obtained as on any normal machine.



VIEW OF
LOWER PORTION OF
QUADDER

INDENTIONS
MODEL "E"
(Dr.-p.23)

The right hand indentation is obtained in the same way as on the conventional machine. The left hand indentation adjustment will be found on the bronze Left Hand Vise Jaw Positioning Nut (5). Loosen the Lock Screw (6) and turn Adjusting Screw (7) in or out as required.

SELECTOR ADJUSTMENT

MODEL "D"
SELECTOR

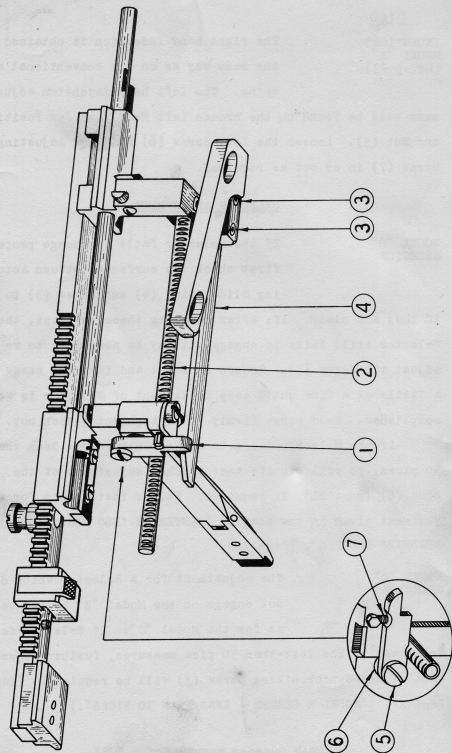
If the Selector fails to engage properly, first check the surfaces between Actuating Slide Guide (4) and Screw (3) to see if they are clean. If, after cleaning these surfaces, the Selector still fails to engage, it may be necessary to re-adjust the Screw (3). Loosen Lock Nut and turn the screw up a little at a time until easy engagement of Selector is accomplished. Hold screw firmly while tightening lock nut.

If the Selector fails to engage on measures less than 30 picas, it will signify that further adjustment of the Stud (6), (page 21), is required. Follow instruction for adjustment given in the section "CENTER ON LESS THAN 30-PICA MEASURES-MODEL D", (Page 22).

MODEL "E"
SELECTOR

The adjustment for a Selector which does not engage on the Model "E" is the same as for the Model "D". If Selector fails to engage on the less-than-30 pica measures, further adjustment of the Synchronizing Screw (3) will be required. (See Page 24: "MODEL E CENTER - LESS THAN 30 PICAS".)

TOP VIEW OF DELIVERY SLIDE



DELIVERY SLIDE RATCHET AND OPERATING FINGER**ADJUSTMENT OF
OPERATING PAWL**

The Delivery Slide Ratchet Operating

Pawl (1) must be clear of the Ratchet

(2) when it is in normal position. If

it is riding on the Ratchet, it should be adjusted in this way:

Loosen the two screws (3) and raise Operating Finger

(4) just enough to cause pawl (1) to clear the Ratchet.

Tighten screws.

**OPERATING PAWL
REPLACEMENT**

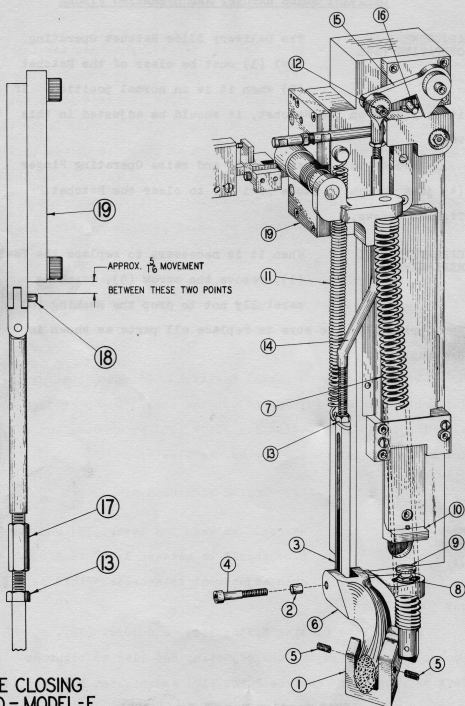
When it is necessary to replace the Pawl

(1), remove the screw (5), watching

carefully not to drop the Bushing (6)

and Spring (7). Be sure to replace all parts as shown in drawing.

REAR VIEW OF QUADDER MODEL-D



ACTUATING SPRING AND BRACKET

REPLACEMENT

If it becomes necessary to replace the Actuating Bracket (1), be sure Spacing Bushing (2) is first inserted at bottom of the Vise Closing Rod (3). Tighten up the Holding Screw (4). This Screw must be tightened as much as possible before proceeding to adjust the Clamping Screws (5) on the back of the bracket. These latter two screws must be turned alternately and gradually so as to obtain an equal bearing on each side to avoid strain.

Now set the Selector in "REG" position, and permit machine to turn around until the Vise Closing and Justification Lever (6) rises to its highest point. Then replace Actuating Spring (7).

Bring machine to normal position. Loosen Actuating Adjustment Screw Nut (8) and adjust the Screw (9) up or down so that the hand clears Actuating Slide (10) by about $1/16$ " at the nearest point on the arc as the Vise opens.

VISE CLOSING MECHANISM

ADJUSTMENT
MODEL "D"

Movement between the Lever (15) and Cam (16) should be between $1/16$ " to $1/8$ ".

When adjustment is necessary this is

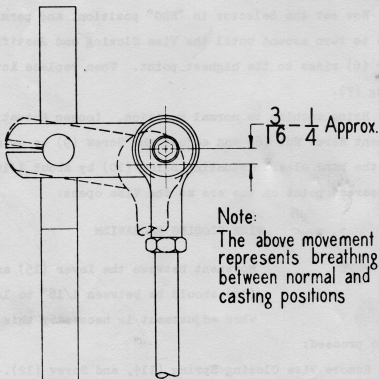
how to proceed:

Remove Vise Closing Spring (11), and Screw (12). Loosen Lock Nut (13). Turn Adjusting Rod (14) to right or left as required. Replace Screw (12) and tighten Lock Nut (13).

WISE CLOSING MECHANISM (Cont'd)

ADJUSTMENT
MODEL "E" Loosen Lock Nut (13). Turn Adjusting Screw
(17) up or down to obtain approximately a
5/16" movement between Stop Pin (18) and
bottom of Fastening Plate (19). Loosen Lock Nut (13).

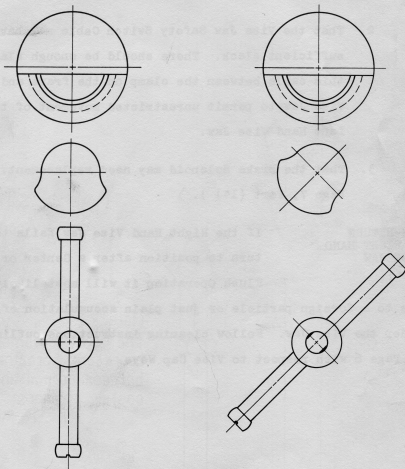
ADJUSTMENT
OF
E-1 STYLE The later type Vise Closing mechanism requires
a movement of 3/16" to 1/4" between normal and
casting positions.



WISE LOCKING STUDS AND SCREWS

Breakage occurs very often because of improper bearing of the two "lip" surfaces of the Stud and Screw, respectively. The bearing should be full at all times.

The drawing below shows the proper and improper relationships of the two parts.



CORRECT

INCORRECT

WISE JAW ACTION**"CREEPING"
OF LEFT HAND
WISE JAW**

If the Left Hand Vise Jaw should move to the right after the cast, it will generally signify one of the following:

1. That the Brake Release mechanism is out of adjustment. (See Pages 19 and 20 for adjustment).
2. That the Vise Jaw Safety Switch Cable may have insufficient slack. There should be enough slack in this cable between the clamp on the frame and the Vise Jaw to permit unrestricted movement of the Left Hand Vise Jaw.
3. That the Brake Solenoid may need replacement. (See Page 7, Part (14)).

**NON-RETURN
OF RIGHT HAND
WISE JAW**

If the Right Hand Vise Jaw fails to return to position after a Center or Left

Flush Operation it will most likely be due to a foreign particle or just plain accumulation of dirt under the Vise Jaw. Follow cleaning instructions outlined on Page 6 with respect to Vise Cap Ways.

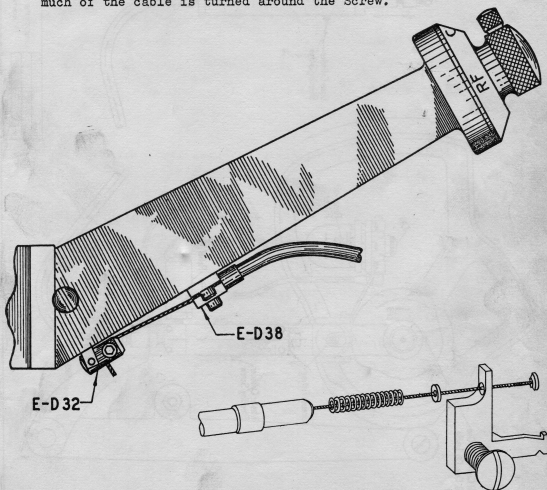
REPLACEMENT OF JUSTIFICATION STOP PAWL CONTROL CABLE

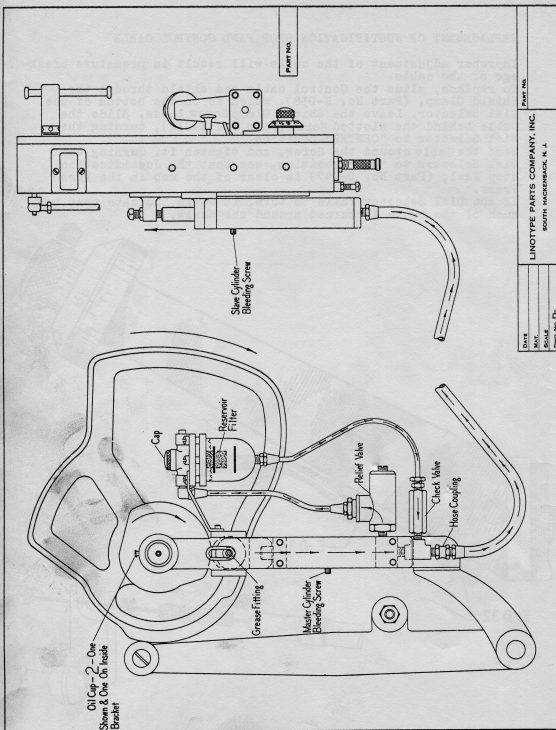
Improper adjustment of the cable will result in premature breakage of the cable.

To replace, slide the Control cable and shield through the Shield Clamp, (Part No. E-D38), which is on the bottom of the Dial Selector. Leave the Shield Clamp Screw loose. Slide the Cable behind the slotted Screw (Part No. E-D32), turning the Dial Selector to "CENTER" position.

Bend the Cable around the Screw, and tighten it. Turning the Dial Selector to "REG" position, see that the Justification stop Pawl, (Part No. D-D47) is clear of the web in the Vise Frame.

If the Dial Selector fails to turn, it would indicate that too much of the cable is turned around the Screw.





THE HYDRAULIC ACTUATING UNIT

This is a very simple mechanism but of great precision. If used in sensible fashion, it will require very little attention. Certain precautions should be taken however as outlined below:

- 1 - DO NOT TURN THE BLEEDER SCREWS OR PERMIT ANYONE TO TAMPER WITH THEM. IF THIS SHOULD OCCUR, OIL WILL BE DRAINED FROM, AND IN ALL LIKELIHOOD AIR WILL GET INTO THE SYSTEM. LOSS OF PRESSURE WILL RESULT.
- 2 - FOLLOW THE LUBRICATION INSTRUCTIONS.
- 3 - KEEP OIL AT SPECIFIED LEVEL WITH THE SPECIAL OIL PROVIDED. A FURTHER SUPPLY MAY BE ORDERED FROM THE FACTORY, BRANCH OR AGENCY.
- 4 - KEEP DIRT OUT OF OIL.

Should the quadder fail to operate properly due to failure to follow the instructions outlined above, it will then be necessary to make corrections according to procedure listed under the headings: "BLEEDING THE SYSTEM" or "CLEANING OF HYDRAULIC SYSTEM", in the following pages.

Should any other problems arise not covered in this manual, please write direct to the factory at South Hackensack, detailing all information possible.

LUBRICATION

Under normal circumstances the only maintenance required in this hydraulic unit is lubrication at the two oil cups on top of the Cam Shaft, and the grease fitting on the Cam Roll Pin.

The oil cups should be filled daily or as experience in the individual plant dictates. It should, however, be done regularly as a part of the routine. The Cam Roll should be lubricated regularly also once a month.

OIL LEVEL

The Oil Level in the Reservoir should be checked daily merely as a matter of precaution. The oil should not go below the lower line on the bowl, nor higher than upper line. If too high it will spill through the breather in the cap. Use Only the special oil provided with the hydraulic unit. A further supply may be ordered from the nearest branch or agency as noted above.

To add oil unscrew the Cap on top of the Reservoir. Pour oil slowly into the Reservoir, but do not remove the filter except when foreign particles are accidentally introduced into it. Then it is necessary to lift out the filter and wash it in clean gasoline. If an air line is available it is good practice to blow out the screen after the washing.

CLEANING OF HYDRAULIC SYSTEM

The only time it is necessary to clean out the hydraulic system is:

- 1- If substitute oils have been used and the system has become polluted. The symptoms of this pollution will be cloudy appearance of the oil and improper action of the quadder.
- 2- If foreign matter has been introduced into the system interfering with the proper functioning of the quadder. This could only occur if the screen is removed before adding oil to the reservoir.

In such case follow the procedure set forth below step by step, from one to twelve, carefully.

1. See that machine is in normal position.
2. Disconnect Hose Coupling; remove Bleeder Screws on Master and Slave Cylinders. Remove Hose Clamp on frame of machine, and let oil drain out.
3. Remove Reservoir Cap and Screen inside Bowl. Clean Screen in gasoline and blow out with air if available. Replace. Reconnect hose.
4. Refill reservoir only with the special oil provided with STAR Quadder for this unit.
5. When oil begins to flow from Bleeder Ports disconnect hose and drain system again.

6. Repeat Step 3.
7. Repeat step 4.
8. Oil will first flow from Master Cylinder Bleeder Port. As soon as oil appears replace Bleeder Screw. Oil will then flow from Slave Cylinder Port. As soon as it appears replace the screw.
9. Refill Reservoir with clean oil.
10. Start machine; make one complete cycle.
11. On second cycle stop machine in casting position (highest point of Hydraulic Cam). Back off Bleeding Screw on Slave Cylinder two full turns. (Be sure to cover screw with a rag to prevent oil from squirting over the machine and the person of the tender during the bleeding). When the air is all out clear oil will flow out into rag. Tighten bleeder screw, with fingers only. Make sure there is no leak, and that the washer is intact.
12. Repeat steps 10 and 11 for bleeding Master Cylinder. When the system is properly bled, the quadder set on left flush for 30 ems, the jaws should come together, relieve, press together, relieve, and drift apart. If not, repeat step 10, 11, and 12, until the desired jaw movement is attained.

BLEEDING THE SYSTEM

Should air get into the system it will be necessary to bleed it. In that case, follow the procedure given in the steps 9 to 12 above.

INSTRUCTIONS FOR REPLACEMENT OF
RELIEF VALVE ON HYDRAULIC QUADDING ATTACHMENT

PLEASE REFER TO ILLUSTRATION ON PAGE 36

1. Disconnect tubing to Reservoir.
2. Drain Reservoir in to a container.
3. Remove check valve.
4. Remove relief valve.
5. Put sealing compound* on threads of new relief valve and screw into position - nozzle straight up. Make a very tight joint.
6. Put sealing compound* on nipple and replace check valve. Make a very tight joint.
7. Reconnect the tubing to reservoir.
8. Follow instructions for filling and bleeding system. Use new oil to be sure it is clean.

* - A good sealing compound is Permatex Aviation Form-A-Gasket Number 3 which may be obtained at most Automobile Accessory Stores: - or any similar compound for sealing joints on hydraulic systems may be used. The important thing is to be sure the lead or first thread is well covered.